

REMARKS

Pending Claims

Claims 1-6 and 73-78 are pending. Claims 7-72 and 79-144 are withdrawn from consideration.

Allowable Subject Matter

Applicant gratefully acknowledges the Examiner's recognition of the allowability of claims 1-6 and 73-78 over the art, pending the rejection under 35 U.S.C. § 112, first paragraph, for lack of enablement. In view of the arguments presented herein, Applicant respectfully submits that the rejections for lack of enablement have been traversed. Accordingly, Applicant respectfully requests that the rejections be reconsidered and withdrawn and that a Notice of Allowance be issued forthwith.

Rejections under 35 U.S.C. § 112, First Paragraph

Claims 1-6 and 73-78 stand rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement. In particular, the Examiner argues that the specification does not provide sufficient information for calculating a hyperbola as recited in the claims. However, in view of the arguments presented herein, Applicant respectfully submits that the rejection has been traversed and requests that the rejection be reconsidered and withdrawn.

The Examiner states that the specification only provides a general description of calculating a hyperbola and asserts that "it is required to provide a detail discussion of how to calculate a hyperbola such as an equation that has a relationship between base stations and the radio terminal." Office action at p. 2.

However, it is well established that "[a] patent need not teach, and preferably omits, what is well known in the art." MPEP 2164.01. The MPEP explains that "[a]ny analysis of whether a particular claim is supported by the disclosure in an application requires a determination of whether that disclosure, when filed, contained sufficient information regarding the subject matter of the claims as to enable one skilled in the pertinent art to make and use the claimed invention." MPEP 2164.01.

In the present case, the equations that would be used to calculate a hyperbola according to embodiments of the invention are conventional mathematical formulas that are known to those having skill in the art. For example, without limitation, the following known equations that describe hyperbolas in either linear or polar coordinate systems could be used:

$$\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1 \quad \text{and} \quad r = \frac{a(e^2 - 1)}{1 + e \cos \theta}$$

As part of the claimed terminal location specification method and system, a hyperbola can be determined by combining conventional mathematical formulas with information that is known or which can be measured, including the geographical locations of the radio stations, the distance between the terminal and one of the stations, and the difference in distance of the terminal from the two stations.

As recited in the claims, at least one circle is calculated in addition to the hyperbola, and the intersection points between the circle and hyperbola constitute the candidate points for the geographical location of the radio terminal. Thus, given that the distance between the stations is known and that the distance from the terminal to a first station (i.e. the station around which the circle is centered; see, e.g., base station 22 in Fig. 5; see also p. 35, line 1, through p. 36, line 2 of the specification) is also known, the distance from a second station (see, e.g., base station 23 in Fig. 5) to the terminal can be determined based on the information regarding the difference in arrival times of radio signals at the terminal. This information in turn can be used to find one of the points on the hyperbola (see, e.g., candidate point 13 in Fig. 5), which is one of the points at which the hyperbola and the circle intersect. As shown in Fig. 5, the remaining information needed to define the hyperbola is known or readily determined, including for example that the location of the first station constitutes the center of the hyperbola and the point at which the circle crosses a line between the two stations constitutes the focus of the hyperbola.

Having defined the hyperbola, a second possible location of the terminal (see, e.g., candidate point 14 in Fig. 5) can also be calculated using the equations for the hyperbola and the circle. As recited in the claim, information regarding the communication sectors of one or both of the radio stations can then be used to determine which of the possible locations is actually the geographical location of the terminal.

Therefore, one skilled in the art would be fully enabled to calculate a hyperbola, as recited in the claims, by combining information in the specification together with conventional mathematical formulas.

CONCLUSION

In view of the remarks presented herein, reconsideration and withdrawal of the pending rejections and allowance of the claims are respectfully requested. The Examiner is strongly encouraged to contact the undersigned at the phone number below should any issues remain with respect to the application.

No fees are believed due in connection with this response. However if any fees are owed, please charge such fees to Deposit Account No. 50-1965.

Respectfully submitted,

/thomas j. keating/

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